Organization for the Assabet River

Newsletter July 2006

Meeting the new permit limits: Assabet towns rise to the challenge

Alison Field-Juma

The permits have been issued, the appeals have been settled. What's next for the Assabet sewered municipalities? Marlborough, Northborough, Westborough, Shrewsbury, Hudson, and Maynard are beginning the process of upgrading their wastewater treatment facilities to meet the new pollutant limits, including the phosphorus concentration limit of 0.1 mg/L. Each of the towns and its consultants must now choose from among several phosphorus removal technologies on the market. The towns must consider such factors as cost, reliability, and the technologies' effectiveness in meeting not just the 0.1 mg/L concentration limit, but likely lower future limits. Following is an update on the progress.

Treatment Pilots come to Hudson Wastewater Plant

Hudson resident and OAR board member Marty Moran accompanied OAR staff for a first-hand look at the three wastewater treatment technologies being piloted at the Hudson wastewater treatment plant in early May. Hudson is leading the way, testing three new technologies designed to reduce the effluent's total phosphorus levels to the 0.1 mg/L required by 2010 as part of the current NPDES permit. All of the treatment processes being tested can also reduce effluent metals concentrations.

To evaluate the new technolgies, pilot systems for each were installed at the Hudson wastewater treatment plant for a three-week trial run. Two pilot systems were housed in large trailers and the third was an outdoor system that included a two-story tank. During this period, various flows, chemicals and other process adjustments were made and the resulting level of treatment monitored for each system's effluent to determine the optimal system operation and treatment. Test samples were sent to an independent lab for analysis.

Public Works Director Tony Marques led the tour through the facility, last upgraded in 1986, together with staff from Wright-Pierce, the town's consulting engineer. The plant is permitted to discharge up to an average of 3.0 million gallons of effluent per day (mgd) and currently operates at a flow of approximately 2.2 mgd. Efforts to reduce flow from groundwater infiltration and from illicit connections have been effective at reducing wastewater flows down from 2.82 mgd eight years ago.

Capturing the phosphorus

The three technologies being tested are: Kruger's Actiflo® system; Infilco Degremont's DensaDeg® system; and Infilco Degremont's AquaDAF™ system. Any of these systems could be added to Hudson's current process to treat the effluent stream prior to disinfection and discharge into the Assabet River. As a first step, each of the pilot systems adds ferric chloride as a coagulant (other

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Otters and fishers and minks - oh my!

Dave Griffin

In the last newsletter we peeked into the lives of beavers and muskrats, two of the river-dwelling mammals that inhabit our Assabet River. The beaver and muskrat "share" the river with two more elusive mammals: minks and river otters. The muskrat, being the primary late-night snack for the mink, doesn't likely view this much as a sharing proposition.

Minks (*Mustela vison*) are members of the weasel family (cousins of the skunk and otter), about 18-24 inches long with long furry tails (female minks are smaller than their male counterparts) and weigh about three pounds. Their fur is thick and dark brown with a lighter patch under the chin or belly. Webbing on their feet makes them very effective swimmers.

If you think you see a mink, but it's way too large, you are likely looking at a fisher. Fishers are also members of the weasel family but are two-three feet long and large males can weigh over 12 pounds. You would think that with a name like fisher they would be one of our river-

Otters and more, *page 6*

Left: mink in the Assabet River NWR. Right: fisher in the Oxbow NWR.
Photos by Ron McAdow (courtesy of the Wildlife Trails Education Project, www.wtep.org)

Inside this issue

OAR

The Organization for the Assabet River is a nonprofit organization established in 1986 to protect, preserve, and enhance the natural and recreational features of the Assabet River, its tributaries and watershed.

The OAR Newsletter is published three times a year by the Organization for the Assabet River. It is free to OAR members.

Julia Blatt, *Editor*
Julia Khorana, *Production & Graphics*
Julia Blatt, Alison Field-Juma, Dave Griffin, *Articles*
Sue Flint, Dave Griffin, Ron McAdow, Dan Stimson, Tom Wilson, *Photographs*

printed on recycled paper

Organization for the Assabet River
9 Damonmill Square, Suite 1E
Concord, Massachusetts 01742
Tel: (978) 369-3956
Fax: (978) 318-0094
oar@assabetriver.org
www.assabetriver.org

Moving on . . .

OAR staff celebrates River Solstice. Left to right: Julia Khorana, Dottie MacKeen, Julia Blatt, Alison Field-Juma, Sue Flint. Photo by Dave Griffin.

After eight years at the helm of this organization, it's time to pass the paddles to someone else.

I've loved serving as your executive director, and am confident that whoever follows me in this position will be delighted with the wonderful board, talented staff, loyal members and generous supporters that come along with the job. As I write this, even the river is full of water, so it feels like I'm leaving everything in pretty good shape.

When I joined OAR in 1998, OAR had never had a professional executive director. I inherited a tiny staff of one part-time person, a miniscule budget, and a board that met in OAR's cramped, basement space to discuss the administrative minutia of running a mostly volunteer organization. One of the first things I did was call the director of a nearby, very successful watershed organization to ask for advice. The advice he shared that day has over the years became a kind of mantra for me: "Focus on your one or two most important issues and don't let go until you've made a difference. As a small organization, you can't be all things to all people. But whatever you do, do it well." This has meant that as often as we've said yes to projects, collaborations, even grants – we've also said no. Early on, OAR staff and board agreed that the organization's highest priority had to be improving the Assabet River's water quality, which meant cleaning up that wastewater effluent. Not an easy task when you consider that OAR doesn't administer these facilities nor do we regulate them.

Along the way, OAR grew – we now have six part-time staff – and the board realized it would be more comfortable holding its meetings elsewhere. In addition to tackling the water quality issue, we have worked on protecting the river's flow. One of our proudest achievements has been our partnership with Intel Massachusetts to support water recharge projects in the Assabet watershed. Another has been our StreamWatch program to measure the flow in Assabet tributaries. We have continued many OAR traditions, like the annual volunteer river cleanup, which can attract over 250 people when the weather cooperates. We have started new ones, like RiverQuest and RiverSolstice. We have expanded our network of partners to include municipalities, regulatory agencies, corporations, elected officials, and lots of other non-profits.

But most important, we have learned that a small environmental group can achieve great things for its river (see letter on page 4-5).

June 30th was my last day as OAR's executive director. The board has begun seeking a successor and a job announcement is posted on the OAR website. In the meantime, Staff Scientist Sue Flint will serve as Acting Executive Director. It has been a privilege to work on your behalf for this beautiful river. As always, thank you for your support.❖

Julia Blatt

Hellos, a goodbye, some recognition, and a promotion

OAR is delighted to welcome our two newest board members, **Peter Shanahan** of Acton and **Sue Beede** of Concord. Both board members possess a wealth of technical experience and a passion for the environment. Pete is an environmental engineer with expertise in hydrology and mathematical modeling, and a great deal of experience cleaning up hazardous waste sites. He currently teaches at MIT and has also served on the Acton Conservation Commission. Sue has a long history with OAR, first as a volunteer, than as our first Policy Director, where she focused primarily on wastewater issues. She also has 11 years of experience at the EPA, and currently works to protect Areas of Critical Environmental Concern at the Massachusetts Department of Conservation and Recreation.

Executive Director **Julia Blatt** is stepping down (you can read her message in this issue's Director's note) this month, after eight years of service. OAR congratulates Julia and Board President **Betsy Stokey** on their "Conservation Hero" awards bestowed by the National Park Service in June. The awards recognized their many years of dedication to the Sudbury, Assabet, and Concord Wild and Scenic Rivers. Both Julia and Betsy were instrumental in the rivers' federal designation, and each has served for nearly 20 years on various study and advisory committees that have worked to protect the rivers, traveling several times to Washington, first to testify in favor of the legislation, then to urge continued funding of the program.

Julia Khorana has been promoted to Development Director. Although it's only been a year and a half, we can't remember how we managed without Julia K in this role – she's terrific. If you don't know Julia yet, please introduce yourself when you see her at the next OAR event – if she's not greeting you as you arrive at a meeting or party, she'll be waving to you from the stern of her canoe, as she leads a trip down the Assabet.❖

Intel Groundwater Recharge Fund goes LIVE!

You can now check out OAR's website for lots of new information about the $1.5 million fund for projects in the watershed that increase groundwater recharge. Visit our website to find case studies in Hudson, Shrewsbury, Westborough and Acton, instructions on how to apply for funding, and descriptions of Low Impact Development (LID) technologies. ❖

Interactive map makes its online debut!

In August, the Assabet River's very own interactive on-line map will be up and live on OAR's website. The map is an interactive version of OAR's pocket recreation guide to the Assabet River, and is designed to help you plan a trip down the Assabet River. You can view a slide show of river photos to inspire you, then click on the map for information about put-ins, parking, and potential hazards such as downed trees and poison ivy at the put-in. You can use the "My River Notes" feature to easily compile a printable river trip guide and click on camera icons at each put-in to see what that stretch of the river looks like. Take a look and let us know what you think!

This project is one in a series of Upper Assabet projects created in collaboration with staff and volunteers from the City of Marlborough, and the towns of Northborough, Westborough, and Hudson. We'd also like to thank Dave Griffin for his gorgeous photos, project intern Elena Colman for her research on put-ins, and the talented Monty Lewis, who takes our ideas and makes them look terrific. OAR thanks Intel Massachusetts for their generous support for this project.❖

Welcome, new members!

Jeannine M. Archer
Thomas R. Bevington
Conantum Garden Club
Thomas Desrosier
Kathleen Daly and David Esposito
Anne Marie Taylor and Bruce Harris
Gerald Hickman
Sukumaran Karunakaran
Dick Luxner
Srinivasan Sathyanarayanan
Erik G. Strom
Todd Twine
C. A. Camp and Richard Walega

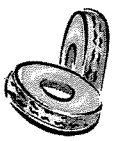
DONATIONS IN MEMORY OF LEON TOMASKY

Alison Field-Juma
GlobalTec Solutions, LLP
Marty and Peter M. Hurley
Sander E. Nydick
Pris and Peter Zrowka
Anonymous (2)

Mark your calendars!

Saturday, September 16
9 a.m. - 12 noon

20th Annual Assabet River Cleanup
The river still needs your help. The work is rewarding, the people friendly, and the pizza afterwards delicious. Cleanup sites will be in Concord, Acton, Maynard, Stow, Hudson, Northborough, and Westborough. Visit our website or call the OAR office for sign up information.



Sunday, October 1
1 p.m. - 3 p.m.

Family Festival Celebrating 20 Years of OAR, Wood Park in Hudson
Entertainment by the New New Orleans Jazz Band, food, and activities for children. Volunteers are needed to help organize this event. Please contact the OAR office at 978-369-3956 or OAR@assabetriver.org.

COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF ENVIRONMENTAL PROTECTION

EPA
Region 1, New England

APR 28 2006

Nancy Stevens
Mayor, City of Marlborough
City Hall
140 Main Street
Marlborough, Massachusetts 01752

Donald Cowles
Chairman, Westborough Wastewater Treatment Plant Board
238 Turnpike Road
Westborough, Massachusetts 01581

Paul Blazer
Executive Assistant, Town of Hudson
78 Main Street
Town Hall
Hudson, MA 01749

Walter Sokolowksi
Superintendent, Town of Maynard Department of Public Works
195 Main Street
Maynard, Massachusetts 01754

Re: Assabet River TMDL and NPDES Permitting

Dear Mayor Stevens, Mr. Cowles, Mr. Blazer and Mr. Sokolowski:

On April 12, 2006, the Environmental Appeals Board dismissed the final remaining appeal filed in connection with the National Pollutant Discharge Elimination System ("NPDES") permits issued last year to the Westborough Wastewater Treatment Plant Board, the City of Marlborough and the Towns of Hudson and Maynard for POTW discharges to the Assabet River. We applaud all of the parties for their cooperative efforts to resolve each of the permit appeals and to avoid what would likely have been contentious, extended litigation.

As your communities proceed with planning the necessary POTW upgrades to comply with NPDES permit requirements, we wish to highlight a very important consideration regarding the current growing season phosphorus effluent limit of 0.1 mg/l.

As we earlier indicated in our response to comments to the draft permits and elsewhere on the public record, EPA and DEP intend to follow the recommended implementation plan and schedule that accompanies the Assabet River Phosphorus TMDL ("TMDL"). As explained in the TMDL implementation plan, the current phosphorus limit is an interim "Phase 1" limit. Depending on whether sediment remediation can reduce sediment phosphorus contributions enough to achieve water quality standards in the Assabet River, your facility may be required in the next permitting cycle to meet a more stringent "Phase 2" limit by 2014.

Consistent with the TMDL implementation schedule, EPA and DEP will initiate development of Phase 2 permits in Spring 2008. If we determine that sediment remediation is unlikely to achieve necessary phosphorus reductions based upon the information available at that time, the agencies will establish new Phase 2 phosphorus effluent limits designed to ensure compliance with water quality standards. As set forth in the TMDL schedule, the agencies will reissue NPDES permits to the Assabet communities upon expiration of the current permits, or five years after their effective dates. Compliance with any new phosphorus effluent limits will be required no later than April 2014. As Phase 2 phosphorus limits may be lower than the limits in the current permits, we once again strongly recommend that you give serious consideration to phosphorus removal technologies compatible with achieving phosphorus effluent limits lower than 0.1 mg/l.

We look forward to working closely with each of the communities over the coming months and years to facilitate an informed, efficient POTW upgrade process and to advance our concerted effort to restore the Assabet River watershed.

Sincerely,

Ira W. Leighton
Deputy Regional Administrator
U.S. Environmental Protection Agency
1 Congress Street
Boston, Massachusetts 02114-2023

Robert W. Golledge
Commissioner
Massachusetts Department of Environmental Protection
One Winter Street
Boston, Massachusetts 02108

cc: Senator Edward M. Kennedy, US Senate
Senator John F. Kerry, US Senate
Senator James McGovern, US House of Representatives
Senator Pamela P. Resor, Massachusetts State Senate
Representative Stephen P. LeDuc, Massachusetts House of Representatives
Representative Patricia A. Walrath, Massachusetts House of Representatives
Glenn Haas, DEP
Selectman Edward P. Perry, Jr., Town of Stow Board of Selectmen
Julia Blatt, OAR
Chris Hatfield, U.S Army Corps of Engineers

Otters and more, *page 1*

dwelling animals, but fishers don't hang around the water that much and tend to prefer forest areas with denser cover.

While they may look quite cute and cuddly, minks are very skilled hunters. They are strictly carnivores whose diet varies with the available prey. Muskrats, along with voles, rabbits, and other rodents, are very popular mink meals. Equally desirable are fish, crayfish, frogs, and clams.

Because he is a hunter, the range of a mink is rather large. A single mink might patrol up to a mile's worth of riverfront. Minks make their dens in hollow logs or in burrows along stream edges. They've even been known to use abandoned muskrat burrows or beaver lodges.

Mating season for minks runs from February through April. Litters of three to six kits are born in April or May. Within seven weeks they are nearly half their adult size. The young minks must fend for themselves by autumn.

Minks are generally tolerant of human activity. Indeed, I've seen more mink in the Concord stretch of the Assabet than in any other section. Spotting a mink is pretty rare, but you can often find signs of mink along river and stream beds. You have to keep a sharp eye out for minks as they can move very quickly when hunting or following a scent. Minks will scamper over rugged riverside terrain and will dive into snow banks trying to catch a mouse hiding in the layer between the grass and the snow.

Like the mink, the river otter is also a member of the weasel family - and is the largest in that family. Otters are three to four feet long and weigh about 30 pounds. They share with the mink the trait of sexual dimorphism: female river otters are nearly 20% smaller than the males.

More at home in the water than the mink, the river otter's diet consists largely of fish, crayfish and amphibians, but it will also take birds or the occasional muskrat. The otter prefers "slow moving" fish such as suckers, carp, shiners, sunfish, and perch. Game fish, such as trout, are not normally on the otter's menu.

A river otter requires about three square miles of territory to feed its appetite. This requires a fairly healthy ecosystem and the presence of otters is often considered a good sign of water quality.

River otter. Photo by Dan Stimson, Sudbury Valley Trustees.

River otters are not common on the Assabet River, but they are not unknown. There have been sightings in both Stow and Acton - usually during the winter months. Assabet Keeping Track (AKT) has found otter slides and tracks around the Assabet River National Wildlife Refuge, evidence they are in the area. Trackers also use otter scat as a way to identify where otters have set up shop. Otter scat is distinguished by its shiny fish scales, which are not digested by the otter.

While otters are accomplished hunters they are also well known for their playfulness. Finding an otter or otter family in the winter can be especially entertaining as they are known to find a short hillside and slide down the snow. Sliding isn't just for playtime, it is an efficient traveling method when they need to cover longer stretches of snow-covered terrain.

When we look at just these four small furry animals that dwell along the Assabet River it is striking to see how tightly their survival is interwoven with the ecology of the riverbank. The term "riparian area" refers to this boundary between land and the water. As you can see, this riparian land provides a corridor for travel, vegetation for food, hollows for shelter, and access to the river itself.

Protecting this riparian zone is as important as protecting the quality of the water in the river - the two are tightly intertwined. Human development can very easily impact the ecology of the riverfront. Roadways and bridges are obstacles to travel that can often take the life of animals trying to cross them.

Otter slide and tracks. Photo by Tom Wilson, River Meadow Brook Association.

Manicured lawns that extend to the river edge remove a diversity of vegetation that act as both food source and shelter. Intrusions by pets can increase the stress on riverside-dwelling animals making otherwise good habitat unsuitable for caring for their families. Ideally, the riparian corridor should be at least 100 yards on each side of the river and should retain features like dead or dying standing trees, hollow logs, sandy banks, bank-side burrows, and a wide variety of trees and bushes.

The more we, as individuals and communities, protect this corridor, the greater the chance that the muskrat, beaver, minks, otters and many other animals large and small will make their home along the banks of the Assabet -- and we'll hear a resounding slap of approval from the riverside residents.❖

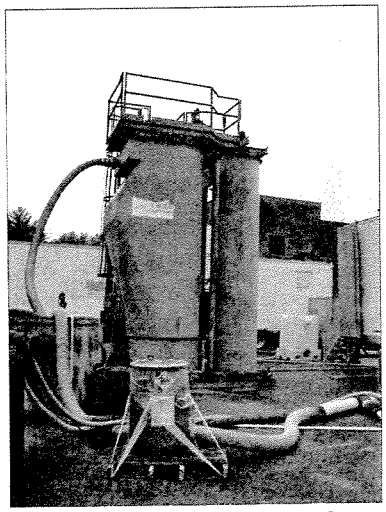
Correction to "why do I need a rainbarrel" in our April 2006 newsletter. We stated "that one inch of rain on a 1,000 square foot roof yields 62 gallons of water." It should have said 623 gallons of water.

Challenge, *page 1*
coagulants are also being tested) which combines with phosphorus to form ferric phosphate particles. Polymer is then added to bind the particles together into larger clumps; some metals are also bound with them.

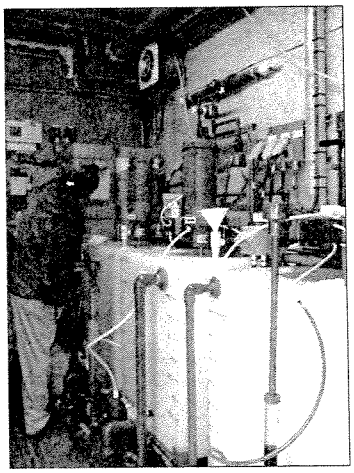
Getting the phosphorus out

At this point the three processes diverge. In the Actiflo® system, sand is added as the ballast material, to which the particles adhere and quickly settle out. The sand is continuously "cleaned" to separate the organic from the inorganic material and then recycled. In contrast, the AquaDAF™ system bubbles air through the solution and the particles float to the top as a sludge which is skimmed off. The DensaDeg® system uses some of its own recycled sludge as ballast to make the particles settle out. All three technologies result in similar amounts of sludge being produced, which would be combined with sludge from the rest of the plant, processed and trucked off-site. As chemicals necessary for this treatment process can be expensive, the process that uses the smallest amount of chemicals may have an operational cost advantage over the other systems.

Although not being specifically tested onsite, the disinfection process is also being evaluated to determine whether ultraviolet disinfection could replace the current chlorination/dechlorination process.



Infilco Degremont's DensaDeg® system uses its own recycled sludge to make particles settle out.



Kruger's Actiflo® system uses sand to make particles settle out.

The initial results and the future

According to Wright-Pierce, so far all three processes being pilot tested have demonstrated an ability to reduce the effluent phosphorus level to 0.1 mg/L. The pilot testing systems are also being pushed to see if treatment levels below 0.1 mg/L can be achieved.

The pilot testing is a critical step in the design process as the technology selected for full-scale implementation should meet both the phosphorous discharge limits currently specified in the NPDES permit and lower limits which can be expected in the future.

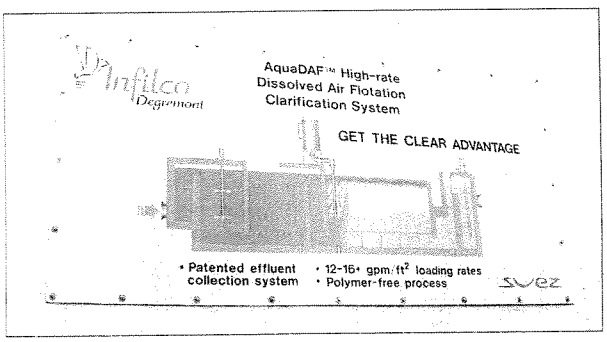
Progress all along the river

The four wastewater treatment plants discharging to the Assabet are all part of the Comprehensive Wastewater Management Plan (CWMP) process being carried out by the six municipalities discharging to the river. All communities are in the process of finalizing the CWMP Phase III report to the Commonwealth, which will present various alternatives for meeting nutrient removal levels. Each plant is different in its processes and wastewater composition. We will be reviewing these reports, which will be submitted as draft Environmental Impact Reports to the state through the MEPA process.

The Phase III report for the **Westborough** wastewater treatment plant, also serving **Shrewsbury**, will be submitted to the state by mid- to late summer according to plant operator Chris Pratt. They are completing the alternatives analysis, which includes 5-6 options, one of which will be recommended by their consultants. Whether they need to do pilots will depend on how similar their plant and needs are to existing plants elsewhere in the country. It will then be available for public review and comment.

Marlborough is scheduling a pilot of the BioMag technology, according to the Chief Operator of the Marlborough Westerly wastewater treatment plant, Harry Butland. BioMag is the next generation of the CoMag phosphorus-removal process used in Concord, developed by Cambridge Water Technologies. BioMag is designed to increase the removal of solids, which include nitrogen as well as phosphorus. They are also considering switching from chlorination to UV disinfection, depending on the phosphorus removal process selected. The Marlborough Westerly plant also treats wastewater from **Northborough**.

In **Maynard**, Charlie Dismuke, wastewater treatment plant Manager and Chief Operator, says they are looking at three technologies: AquaDAF and Actiflow (described above for Hudson), and CoMag, and expect to have the design work out for bid later this year, depending on how quickly the MEPA review is completed. They are also open to whatever new technologies may emerge.❖



Schematic of Infilco Degremont's AquaDAF™ system which uses bubbles of air to float particles to the top where they are skimmed off.

OAR

Organization for the Assabet River
9 Damonmill Square, Suite 1E
Concord, MA 01742

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Chair, Planning Board
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Acton, MA 01720

OAR

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  - ☐ Steward $1000
- ☐ Guardian $500
- ☐ Protector $250
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- ☐ Activist $50
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- ☐ Student/senior $15
- ☐ Other _____

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Organization for the Assabet River
9 Damonmill Square, Suite 1E
Concord, MA 01742

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- If your employer has a matching gift program, please include the company's form.
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Thank you for your support!